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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,223	06/13/2001	Louis L. Hsu	728-208(YOR9-2001-0270 US	5309

7590 05/07/2003

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EXAMINER

RAO, SHRINIVAS H

ART UNIT PAPER NUMBER

2814

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/880,223

Applicant(s)

HSU ET AL.

Examiner

Steven H. Rao

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 and 18-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 12-17, 29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Response to Amendment

The amendment filed on February 19, 2003 has been entered on February 25, 2003.

Therefore claims 12, 13, 15-17 as amended by the amendment and claims 29-30 presently newly recited and claim 14 as originally filed are currently pending in the application.

Claims 1-11 and 18-28 were previously withdrawn from consideration.

Election/Restrictions

This application contains claims 1-11 and 18-28 drawn to an invention nonelected with without traverse in Paper No. 4.

A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Drawings

The drawings filed on February 13, 2003 have been accepted by the drafts person.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 12 – 17 and 29-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 12 presently recites, "first and second device" instead of the previously recited "thyristor" and a "transfer gate", to the extent Applicants' claim first and second devices other "thyristor" and a "transfer gate" the same is not supported by the specification as originally filed.

Similarly in claim 13 applicants' amending "stacked pseudo-TFT" to "device" is not supported by the specification and Claim 17 "wiring" for "word line".

Dependent claims 12-17 and 29-30 are also rejected at least for depending upon a rejected independent claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims rejected under 35 U.S.C. 103(a) as being unpatentable over Nemati et al. (U.S. Patent No. 6,448,586 herein after Nemati) previously applied and Kumagi (U.S. Patent No. 5,357,125 herein after Kumagi).

With respect to claim 12, a T-Ram array including a plurality of T-Ram cells (Nemati fig. 8, col. 6 lines 65-66), wherein each of the plurality of T-Ram cells includes a

thyristor region beneath at least a portion of a transfer gate region. (Nemati fig.8, p portion of 40 a, b, and c under respective gate 48).

Nemati does not label his gate as a transfer gate however it is inherent from the description in col. 7 lines 1-15 that Nemati's gate 48 functions like a pseudo TFT (similar to applicant's description at page 5 of the specification) and therefore one of ordinary skill in the art would readily recognize Nemati's gate 48 to be a transfer gate similar to that claimed.

Assuming arguendo that the newly added limitation, " wherein said second device being buried underneath said second device, wherein said second device covers the entire top surface of said first device, and further wherein the top surface of said second device forms a planar top surface of each said T-Ram cell." is supported by the specification as originally filed the following rejection is made.

Nemati does not specifically describe the newly added limitation wherein said second device being buried underneath said second device, wherein said second device covers the entire top surface of said first device, and further wherein the top surface of said second device forms a planar top surface of each said T-Ram cell.

However, Kumagi in figures 1-5 and col. 5 lines 61-68 describes wherein said second device being buried underneath said second device, wherein said second device covers the entire top surface of said first device, and further wherein the top surface of said second device forms a planar top surface of each said T-Ram cell to form a semiconductor device that is readily integrated into one chip and can be effectively used as a power switching device.

Therefore it would have been obvious to one of ordinary skill in the art to include Kumagi's said second device being buried underneath said second device, wherein said second device covers the entire top surface of said first device, and further wherein the top surface of said second device forms a planar top surface of each said T-Ram cell in Nemati's device to form a semiconductor device that is readily integrated into one chip and can be effectively used as a power switching device.

With respect to claim 13, wherein the thyristor region is a buried vertical thyristor (Nemati fig. 8 p-region) and the second device is a horizontal transfer gate (Nemati fig. 8 , col. 7 lines 1-15).

With respect to claim 14, wherein each of the plurality of cells has a size less than or equal to $8F^2$. (It is well known in the prior art that T-ram cells have a size of $8F^2$ or less as admitted by the applicants' herein in their co-pending application No.2002/0093030 published on July 18, 2002 in its abstract lines 10 –13 etc.)

With respect to claim 15, wherein said substrate is a semiconductor SOI or bulk wafer (Neamti fig. 6a # col. 6 lines 20-27).

With respect to claim 16, wherein the base of said thyristor is surrounded by a surround gate . (Nemati fig. 8 thyristors 40 a, b and c being surrounded by the gate 48).

With respect to claim 17, Nemati describes wherein each of the plurality of T-Ram cells includes structure for the traversal of at least two word lines there through. (Nemati fig. 5, col. 5 lines 33-60) said planar top surface of each T-Ram cell provides for simplified fabrication of metal wirings, said wirings being fabricated over said planar top surface of said T-Ram cells, said wirings for inter connecting said T-Ram cells .

The limitation , “said planar top surface of each T-Ram cell provides for simplified fabrication of metal wirings, said wirings being fabricated over said planar top surface of said T-Ram cells, said wirings for inter connecting said T-Ram cells “ is taken to be a product by process limitation.

With respect to claim 29, wherein the transfer gate comprises a horizontally stacked pseudo-TFT transfer gate.

With respect to claim 30, wherein the horizontally stacked pseudo-TFT transfer gate is formed on a P+ silicon layer utilizing a lateral over growth epi technique via a single crystal seed area.

The limitation “ ils formed on a P+ silicon layer utilizing a lateral growth epi technique via a single crystal seed area “ is taken to be product-by –process limitations and are non limiting. A product by process claim is directed to the product per se, no matter how actually made. See *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974), *In re Marosi et al.* 218 USPQ 289, 292 (Fed. Cir. 1983) and particularly *In re Thrope*, 27 USPQ 964, 966 (Fed. Cir. 1985), all of which make it clear that it is the patentability of the final structure of the product gleaned from the process steps, which must be determined in a “ product by process” claim, and not the patentability of the process. See also MPEP 2113. More ever an old or obvious product produced by a new method is not a patentable product, whether claimed in “ product by process” claims or not.

Response to Arguments

Art Unit: 2814

Applicant's arguments filed 02/19/2003 have been fully considered but they are not persuasive for the following reasons:

Applicants' newly added limitation, "A first and second device, said first device being buried underneath said second device, wherein said second device covers the entire top surface of said first device, and further wherein the top surface of said second device forms a planar top surface of each said T-Ram cell." is not supported by the specification as originally filed and therefore constitutes new matter.

Assuming arguendo that Applicants' can find support, the newly added limitation is described by the newly applied reference Kumagi.


Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (703) 306-5945. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:00 p.m.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956. The Group facsimile number is (703) 308-7724.


Steven H. Rao

Patent Examiner

April 25, 2003.


LONG PHAM
PRIMARY EXAMINER